

## **§483.65 Infection Control**

**The facility must establish and maintain an infection control program designed to provide a safe, sanitary and comfortable environment and to help prevent the development and transmission of disease and infection.**

### **§483.65(a) Infection Control Program**

**The facility must establish an infection control program under which it –**

- (1) Investigates, controls, and prevents infections in the facility;**
- (2) Decides what procedures, such as isolation should be applied to an individual resident; and**
- (3) Maintains a record of incidents and corrective actions related to infections.**

### **§483.65(b) Preventing Spread of Infection**

- (1) When the infection control program determines that a resident needs isolation to prevent the spread of infection, the facility must isolate the resident.**
- (2) The facility must prohibit employees with a communicable disease or infected skin lesions from direct contact with residents or their food, if direct contact will transmit the disease.**
- (3) The facility must require staff to clean their hands after each direct resident contact using the most appropriate hand hygiene professional practices.**

### **§483.65(c) Linens**

**Personnel must handle, store, process and transport linens so as to prevent the spread of infection.**

1 ***INTENT: (Tag F441) 42CFR 483.65 (a) Infection Control***

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3 The intent of this regulation is to assure that the nursing home, through the infection  
4 control program has systems in place to:

- 5 • Provide surveillance, investigation and monitoring to prevent, to the extent  
6 possible, the onset and the spread of infection;
- 7 • Control outbreaks, by clustering or cohorting of residents to reduce spread of  
8 infection;
- 9 • Develop, implement, maintain nursing home processes using data records of  
10 incidents, corrective action taken, and staff education to improve infection  
11 outcomes;
- 12 • Determine nursing home precautions (e.g. isolation) as a means of  
13 preventing cross-contamination; and
- 14 • Demonstrate proper storage and handling of linens to minimize  
15 contamination.

16 **DEFINITIONS:**

17 Definitions are provided to standardize relevant terms used to discuss infection control  
18 practices within nursing home facilities.

19 “**Airborne Precautions**” refers to actions taken to prevent or minimize the transmission  
20 of organisms that can be carried along by movements of air.

21 “**Antifungal**” refers to a medication used to treat a fungal infection such as athlete’s foot,  
22 ringworm or candidiasis.

23 “**Anti-infective**” refers to a group of medications used to treat infections.

24 “**Alcohol-Based Hand Rub**” (ABHR) refers to a 60-95 percent ethanol or isopropyl-  
25 containing preparation base designed for application to the hands to reduce the number of  
26 viable microorganisms.

27 “**Colonization**” refers to the proliferation of microorganisms on or within body sites  
28 without detectable host immune response, cellular damage, or clinical expression. The  
29 presence of a microorganism within a host may occur with varying duration, and may

1 become a source of potential transmission. In many instances, colonization and carriage  
2 are synonymous.

3 “**Communicable disease**” refers to an infection transmissible (as from person-to-person)  
4 by direct contact with an affected individual or the individual's body fluids or by indirect  
5 means (as by a vector).

6 “**Community Associated (formerly Community Acquired) Infections**” refers to  
7 infections that develop after admission to the nursing facility that are incubating at the  
8 time of admission, or generally develop within 48 to 72 hours of admission.

9 “**Contact precautions**” refers to systematic and deliberate actions that are designed to  
10 eliminate or minimize the risk of transmission of organisms and specific diseases by  
11 direct or indirect contact. Direct contact involves the physical transfer of microorganisms  
12 to a susceptible host from an infected or colonized person. Indirect contact transmission  
13 involves a susceptible host with a contaminated intermediate object, usually inanimate, in  
14 the resident's environment.

15 “**Contagious disease**” (communicable disease) is an infectious disease communicable by  
16 contact with one who has it, with a bodily discharge of such a resident, or with an object  
17 touched by such a resident or by bodily discharges.<sup>1</sup> Contagious diseases are often spread  
18 through direct contact with an individual, contact with the body fluids of infected  
19 individuals, or with objects that the infected individual has contaminated.

20 “**Cluster**” refers to a grouping of cases of disease, possibly an outbreak.

21 “**Cohorting**” refers to the practice of grouping residents infected or colonized with the  
22 same infectious agent together to confine their care to one area and prevent contact with  
23 susceptible residents (cohorting residents). During outbreaks, healthcare personnel may  
24 be assigned to a cohort of residents to further limit opportunities for transmission  
25 (cohorting staff).

26 “**Droplet precautions**” refers to facility actions designed to reduce the risk of  
27 transmission of microscopic particles produced when a person coughs, sneezes, shouts, or  
28 sings. These particles can remain suspended in the air for prolonged periods of time and  
29 can be carried on normal air currents in a room or beyond, to adjacent spaces or areas  
30 receiving exhaust air.

31 “**Hand hygiene**” refers to a general term that applies to either hand washing with soap  
32 and water or thoroughly applying an antiseptic hand rub (ABHR).

33 “**Hand Washing**” refers to washing hands with plain (i.e. nonantimicrobial) soap and  
34 water.

35 “**Health care associated infection [HAI]**”(formerly known as “nosocomial” and  
36 “facility-acquired” infection) refers to a localized or systemic condition resulting from an  
37 adverse reaction to the presence of an infectious agent(s) or its toxin(s) that 1) occurs in a  
38 resident or resident health care setting (e.g., a hospital or outpatient clinic); 2) was not  
39 found to be present or incubating at the time of admission unless the infection was related

1 to a previous admission to the same setting; and 3) if the setting is a hospital, meets the  
2 criteria for a specific infection site as defined by the Centers for Disease Control and  
3 Prevention (CDC).<sup>2</sup>

4 **“Infection”** refers the establishment of an infective agent in or on a suitable host,  
5 producing clinical signs and symptoms.

6 **“Infection Preventionist (IP)” (formerly Infection Control Professional (ICP))** refers  
7 to a person whose primary training is in either nursing, medical technology,  
8 microbiology, or epidemiology and who has acquired special training in infection control.  
9 Responsibilities may include collection, analysis, and feedback of infection data and  
10 trends to healthcare providers; consultation on infection risk assessment, prevention and  
11 control strategies; performance of education and training activities; implementation of  
12 evidence-based infection control practices or those mandated by regulatory and licensing  
13 agencies.

14 **“Infection control and prevention program”** refers to a multidisciplinary program that  
15 includes a group of activities to ensure that recommended practices for the prevention of  
16 healthcare-associated infections are implemented and followed by Healthcare Personnel,  
17 making the healthcare setting safe from infection for residents. An effective Infection  
18 Control Program utilizes the following components;

- 19 • **Surveillance:** monitoring residents and healthcare personnel for acquisition of  
20 infection and/or colonization;
- 21 • **Investigation:** identification and analysis of infection problems or undesirable  
22 trends;
- 23 • **Prevention:** implementation of measures to prevent transmission of infectious  
24 agents and to reduce risks for device- and procedure-related infections;
- 25 • **Control:** evaluation and management of outbreaks; and
- 26 • **Reporting:** provision of information to external agencies as required by state and  
27 federal law and regulation.

28 **“Infectious Incident or Occurrence”** refers to an event in which disease caused by  
29 bacteria, viruses or other microorganisms is transmitted to a person.

30 **“Medical Waste”** refers to any solid waste that is generated in the diagnosis, treatment,  
31 or immunization of human beings or animals, in research pertaining thereto, or in the  
32 production or testing of biologicals.

33 **“Methicillin Resistant Staphylococcus aureus (MRSA)”** refers to the most frequent  
34 pathogen seen in healthcare facilities (check definition).

35 **“Multi-Drug Resistant Organisms (MDROs)”** is a term used to refer to  
36 microorganisms, predominantly bacteria, that are resistant to one or more classes of

1 antimicrobial agents. Although the names of certain MDROs describe resistance to only  
2 one agent (e.g., MRSA and VRE), these pathogens are frequently resistant to most  
3 available antimicrobial agents.<sup>3</sup>

4 **“Proper Handling Practices”** refers to the use of methods and procedures for handling  
5 contaminated or potentially infectious materials to maintain the highest standards of  
6 safety for residents/residents and staff.

7 **“Standard Precautions”** (formerly **“Universal Precautions”**) refers to infection  
8 prevention practices that apply to all residents, regardless of suspected or confirmed  
9 diagnosis or presumed infection status. Standard Precautions is a combination and  
10 expansion of Universal Precautions and Body Substance Isolation. Standard Precautions  
11 is based on the principle that all blood, body fluids, secretions, excretions (except sweat),  
12 non-intact skin, and mucous membranes may contain transmissible infectious agents.  
13 Standard Precautions includes but is not limited to hand hygiene, safe injection practices,  
14 and the proper use of personal protective equipment (e.g., gloves, gowns, and masks),  
15 resident placement, and care of the environment, textiles and laundry. Also, equipment  
16 or items in the resident environment likely to have been contaminated with infectious  
17 fluids must be handled in a manner to prevent transmission of infectious agents, (e.g.  
18 wear gloves for handling soiled equipment, and properly clean and disinfect or sterilize  
19 reusable equipment before use on another resident).<sup>4</sup>

20 **“Sub acute”** refers to a medical condition that develops less rapidly and generally with  
21 less severity than an acute condition.

22 **“Surveillance”** refers to the ongoing, systematic collection, analysis, interpretation, and  
23 dissemination of data to identify infections and infection risks, to try to reduce morbidity  
24 and mortality and to improve health.

25  
26 **“Transmission-Based Precautions”** refers to airborne, contact, and droplet precautions.

27 **“Urinary Tract Infection (UTI)”** refers to a clinically detectable condition associated  
28 with invasion by disease causing microorganisms of some part of the urinary tract,  
29 including the urethra (urethritis), bladder (cystitis), ureters (ureteritis), and/or kidney  
30 (pyelonephritis). An infection of the urethra or bladder is classified as a lower tract UTI  
31 and infection involving the ureter or kidney is classified as an upper tract UTI.

32 **“Vancomycin Resistant Enterococcus (VRE)”** refers to a strain of enterococcus that  
33 has developed resistance to vancomycin and frequently other antibiotics as well.

34 **“Wound Infection”** refers to the presence of microorganisms in sufficient quantity to  
35 overwhelm the defenses of viable tissues and produce the signs and symptoms of  
36 infection in or around a wound.

## OVERVIEW

Infections are a significant source of morbidity and mortality for residents in nursing homes. Urinary tract infections, pneumonia, and skin and soft tissue infections account for 75 percent of the identified infections in nursing homes.<sup>5</sup>

Infections account for up to half of all resident transfers from nursing homes to hospitals and result in an estimated 150,000 to 300,000 hospital admissions a year.<sup>6</sup> When a long term care resident is hospitalized with a primary diagnosis of infection, the death rate can reach as high as 40 percent.<sup>7</sup> It is estimated that an average of 1.6 to 3.8 infections per nursing home resident occur annually. The cost of infection-related hospital transfers (transfers from nursing homes to hospitals) is estimated to be \$673 million to \$2 billion per year.<sup>8</sup>

In nursing homes, extensive time and resources are expended when infections are suspected or identified. The impact of infections on nursing home practices begins with the admitting process of screening for infection. Following the admission screening, the nursing home must have systems in place to manage the care to the resident with an infection. Managing the infection includes treating the infection, prevention of spread and monitoring the impact of treatment to the resident with infection. The nursing home process for the prevention of infections to nursing home residents extends from admission throughout the residents' stay and potentially impacts the entire resident population to include all staff and visitors. Therefore, it is essential to evaluate infection control practices within the nursing home environment from the residents' admission throughout their living experience within the nursing home. A useful mechanism to review the nursing home practice is to review the actions and practices of the infection control program.

### Understanding the Causes of Infection in Nursing Homes

Many factors contribute to an increased severity and frequency of infections and infectious diseases in nursing homes. These infections arise from either individual or institutional factors, or both. Modes of transmission of infection include but are not limited to:

- a. Droplets or aerosol;
- b. Blood and body fluids;
- c. Fecal matter;
- d. Insects and parasites; and
- e. Food, water, fomites (inanimate objects).

## Individual factors

Examples of individual factors contributing to infections and the severity of the infection outcomes in nursing home residents include, but are not limited to the following:

- Medications affecting resistance to infection-steroids and antibiotics;
- Limited physiologic reserve (e.g., decreased function of the heart, lung, and kidneys);
- Compromised host defenses (e.g., decreased or absent cough reflex predisposing to aspiration pneumonia, thinning skin associated with pressure ulcers, and decreased tear production predisposing to conjunctivitis);
- Coexisting chronic diseases (e.g., diabetes, arthritis, lupus);
- Complications from invasive diagnostic procedures such as trauma to skin;
- Poorer response to therapy (e.g., cell mediated responses); and
- Increased frequency of therapeutic toxicity (e.g., declining kidney and liver function).

The elderly may also have atypical or non-specific signs and symptoms related to infections including but not limited to:

- Changes in cognition of the resident;
- Altered mental status that prevents giving a full history; and
- Coexisting diseases that complicate diagnosis (e.g., joint degeneration vs. arthritis, COPD versus pneumonia).

## Institutional factors

In addition to the individual factors, institutional factors also support the transmission of infection among nursing home residents, including but not limited to:

- Nosocomial pathogen exposure such as shared communal living space (e.g. handrails and equipment);
- Common air circulation;
- Direct/indirect contact with healthcare personnel/visitors;
- Direct/indirect contact with resident care/ facility equipment; and
- Transfer of residents to and from hospitals or other settings.

1 Microorganisms may enter the resident through various points of entry (direct or indirect)  
2 such as:

- 3 • A handshake (body excretions and secretions on the hands can be directly  
4 transmitted person to person);
- 5 • A dressing change of an open wound without proper hand washing;
- 6 • Incontinent care without proper hand washing;
- 7 • Food handling with unclean hands; and
- 8 • Coughing or sneezing (viruses that produce colds and influenza are found  
9 in saliva and sputum and can be transfer in droplets or aerosol).

10  
11 These factors potentially place nursing home residents at increased risk of infection. An  
12 effective infection control program is therefore, necessary to control the spread of  
13 infections. Infection control program components critical to the operations of the nursing  
14 home may include but are not limited to:

- 15 • Reviewing medical files upon admission and identify clients with infectious  
16 diseases;
- 17 • Developing plans of care for residents with infections that include specific  
18 approaches to prevent the spread of infection to others;
- 19 • Implementing policies to prevent the spread of infections that include promoting  
20 consistent adherence to Standard Precautions and other infection control practices;
- 21 • Training facility staff to identify the most common symptoms of infections, i.e.  
22 cough, fever, diarrhea and/or vomiting, and protocols to prevent the spread of  
23 infections;
- 24 • When symptoms suggesting an infectious outbreak occur, launch an investigation  
25 to define the nature and magnitude of the outbreak;
- 26 • Prepare lists of persons who are ill and try to identify recent human and  
27 environmental contacts of each resident to facilitate an infection management  
28 plans;
- 29 • Notify the local Department of Public Health, State Officials and other key  
30 stakeholders and make arrangements for a more detailed investigation by experts if  
31 the status of the outbreak warrants such measures;
- 32 • Maintain rooms to isolate residents as needed, who have viral respiratory  
33 infections, gastro-enteritis, and other infectious diseases that are transmitted by  
34 airborne droplets, contaminated food or water, etc. so that new cases can be  
35 prevented;



- Ensure that rooms used for transmission based precautions for residents with an infection contain hand hygiene equipment and antibacterial hand cleansing dispenser;
- Provide other resources needed to contain infections such as disposable items, laundry facilities, and staff trained in infection control;
- Maintain training records that document training in infection control in employee files;
- Provide policies and procedures to protect staff from infections;
- Document previous illnesses and immunization status of staff; and
- Develop and implement written policies and procedures on how to eliminate resident/resident and staff exposure to infectious substances.

### **Components of an Infection Control Program**

Planning, organizing, implementing, operating and maintaining an infection control system include but are not limited to the following;

- Key Surveillance activities,
- Definitions of infections,
- Calculations of infection rates,
- Data analysis,
- Communication to those who need to know,
- Immunization program,
- Transmission-Based Precautions (formerly isolation precautions), and
- Proper Hand hygiene.

### **Other Aspects of an Infection Control Program**

Additional components of an Infection Control Program include:

- Identifying medical practitioners who can diagnose and treat infectious diseases as they occur in residents;
- Identifying roles and responsibilities of the staff in case of an outbreak of a communicable disease or an episode of infection;
- Developing, implementing and training staff on appropriate infection control policies and procedures;
- Monitoring and documenting each infection;

- Tracking incidents and outbreaks of infection, risk assessment, training and education of staff, infection control audits, and document actions to resolve related problems;
- Providing a nursing home liaison to work with local and state health agencies; and
- Managing food safety, including hygiene, pest control, and waste disposal.

#### **Quality Assessment and Assurance Committee**

A comprehensive and ongoing Infection Control Program can prevent infections and/or quickly contain and treat infections when they do occur. A successful Infection Control program requires the involvement of the facility's entire interdisciplinary team. The facility's Quality Assessment and Assurance Committee monitors all the elements of the infection control program and the infection control practices of the interdisciplinary team. Prevention and management are the basic elements of an Infection Control Program and includes gathering infection rates, monitoring and managing outbreaks, and reviewing antibiotic utilization. Additionally, the Quality Assessment and Assurance Committee may address the following areas:

- Surveillance,
- Outbreak control,
- Policy and procedures,
- Education,
- Resident health programs,
- Occupational program,
- Antibiotic review, and
- Communicable disease reporting.

Membership on this Committee may include the collaborative efforts of the Administrator, the Medical Director or his/her designee, and the Nursing Director and other appropriate facility staff as needed. This Committee also communicates the findings from data collection to the nursing home and directs changes in practice based on identified trends, government infection control advisories, and other factors.

#### **Infection Preventionist (IP), formerly Infection Control Professional (ICP)**

The IP serves as the coordinator of an Infection Control program. The designated IP should have primary training in either nursing, medical technology, microbiology, or epidemiology and may possess additional training in infection control. Responsibilities may include collecting, analyzing, and providing infection data and trends to nursing staff and healthcare practitioners; consulting on infection risk assessment, prevention, and control strategies; providing education and training; and implementing evidence based

infection control practices including those mandated by regulatory and licensing agencies.

#### Surveillance

Infection prevention begins with ongoing surveillance to identify infections that are causing, or have the potential to cause, an outbreak. Essential elements of a surveillance system include: 1) standardized definitions and listings of the symptoms of infections, 2) use of surveillance tools such as surveys and data collection templates, walking rounds throughout the nursing home;<sup>9</sup> 3) identification of resident populations at risk for infection; 4) statistical analysis of data that can uncover an outbreak; and 5) feedback of results to the primary caregivers so that they can continually assess the residents' physical condition for signs of infection. Two types of surveillance (process and outcome) can be implemented in nursing homes.

#### Process Surveillance

Process surveillance reviews practices directly related to resident care.<sup>10</sup> Such actions may include observations of compliance with procedures and policies based on recognized guidelines. Examples of this type of surveillance include monitoring of compliance with transmission based precautions (formerly isolation precautions) and proper hand hygiene.<sup>11</sup> The surveillance processes determines whether the facility:

- Minimize exposure to an infection from a susceptible site;
- Use appropriate hand decontamination prior to, and after, all procedures;<sup>12</sup>
- Use sterile or non-sterile gloves depending on the site and the procedure;<sup>13</sup>
- Use uniforms/clothing protected with a disposable garment;<sup>14</sup>
- Ensure that they use sterile fluids and materials, when indicated;<sup>15</sup>
- Check sterile packs for evidence of damage or moisture penetration;
- Ensure that contaminated/non-sterile items are not placed in a sterile field;
- Ensure that reusable equipment is appropriately cleaned, disinfected, or reprocessed;
- Use single-use medication vials and other single use items appropriately (dispose of after every single use); and<sup>16</sup>
- Avoids contaminating sterile procedures.<sup>17</sup>

## Outcome Surveillance

In contrast to process surveillance, outcome surveillance is designed to identify and report all evidence of an infection. An authoritative resource with definitions and criteria can be used when conducting outcome surveillance.

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## Monitoring

Monitoring is considered an integral part of nursing home surveillance. The nursing home monitors practices (e.g., dressing changes and transmission based precaution procedures) to ensure consistent practice and evaluation of implemented practice changes. All residents are monitored for the risk of infection and for the presence of actual infections. Nursing home infection control reports describe the types and severity of infection and are used to identify trends and patterns. The nursing home monitors infection control processes for compliance with standards of practice (e.g., changing dressings, emptying urinary drainage bags, and administering intravenous medications).<sup>18</sup>

In addition to monitoring processes and outcomes, the nursing home collects data about infections. The IP reviews data (including elevations in temperatures, purulent drainage, culture results, or change in X-ray results consistent with potential infection) on a regular basis. Other sources of relevant data include medication records of antibiotic orders, laboratory cultures and antibiograms (antibiotic susceptibility profiles), medical record documentation including physician progress notes, and transfer summaries accompanying newly admitted residents.<sup>19</sup>

## Data Analysis

Determining the origin of infection helps the nursing home identify the number of residents who developed infections within the nursing home. The nursing home can then evaluate whether it needs to change processes or practices to enhance infection prevention and/or minimize the potential for infection transmission.

Comparing current and past infection control surveillance data to past performance enables detection of any unusual or unexpected outcomes. It is important that surveillance reports be shared with appropriate personnel in the nursing home, including, but not limited to, the director of nursing and medical director. The infection control data summaries support the rationale for infection control measures that enhance its practices to prevent future infections.

Comparing the reported incidence of infections by type and location to previous nursing home reports helps staff identify effective practices and change ineffective ones. This data is recorded at least quarterly and included in the nursing home's quality improvement data.<sup>20</sup>

Comparing infection rates over time can help in the tracking and trending process. In addition, it is important that the staff and practitioner receive reports that are relevant to their practices and help them recognize the impact of their care on infection rates and outcomes.<sup>21</sup>

## **Documentation**

Descriptive documentation provides the nursing home summarized observations related to the investigation of the causes of an infection and/or identifies the underlying cause of infection trends (e.g., as a result of an increase in the incidence of the urinary tract infections, the infection control program decides to observe urine specimen collection for a period of time and to discuss and analyze the results). Overall the six most frequently occurring infections in nursing homes are urinary tract infection, pneumonia, wound and skin, conjunctivitis, gastroenteritis, and influenza.<sup>22</sup>

Nursing homes may use a variety of approaches when documenting, gathering and listing surveillance data. Regardless of whether the facility creates their own form or purchases preprinted forms, the facility should define how often surveillance data will be collected.<sup>23</sup>

## **Outbreak Control**

In nursing homes, it is important to know how to recognize and manage outbreaks. An outbreak is typically one of the following:

- One case of an unusual infection that is not common to the nursing home. Example: One case involving multiple species of intestinal parasites.
- Trends that are 10 percent higher than the historical rate of infection for the nursing home may reflect an outbreak or seasonal variation and therefore warrant further investigation. Example: The nursing home's influenza rate involves 20 percent of residents when the normal rate is three percent.
- Occurrence of three cases of predominant infections over a specified length of time. Example: If three residents are diagnosed with infectious gastroenteritis within one week.

## **Policies and Procedures**

Written policies and procedures explain how to use Standard and Transmission-Based Precautions (formerly isolation precautions); including systems used to identify and communicate information about residents with potentially transmissible infectious agents. These policies and procedures document the nursing home's infection control practices.

Annual revisions indicate that these practices have been reviewed and revised. This review of infection control practices is stimulated by changes in frequency or severity of infections that necessitate changes in nursing home practices. They are essential to ensure the success of these measures and may vary according to the characteristics of the organization. In addition policy and procedures to promote healthcare vaccination programs (e.g., annual influenza vaccination) and worker protections against occupational exposures to infectious agents will support infection control.<sup>24</sup>

## **Education**

Continually educating nursing home staff on infection control will promote infection control practices among the staff. Both initial and ongoing infection control education help to maintain staff competency and compliance with infection control practices. Updated education and training are necessary when policies and procedures are revised or when there is a special circumstance, such as an outbreak, that requires modification or replacement of current practices.<sup>25</sup> The infection control education and training should be discipline-specific (e.g., the insertion of urinary catheter, suctioning, IV care or blood glucose monitoring) with competency evaluations to be effective.

Essential topics of an infection control training includes, but is not limited to routes of disease transmission, hand hygiene, sanitation procedures, MDROs, transmission based precaution techniques, and the federally required OSHA annual barrier precautions for blood borne pathogens and tuberculosis disease updates.

## **Resident Health Programs**

Immunization is a major function in protecting resident health. Record-keeping documents current immunizations of residents for risks such as tetanus, pneumococcal pneumonia, and influenza per current national governmental agencies and professional organizations (i.e., the CDC and American College of Physicians). It is important that all residents have a Tuberculosis (TB) screen upon admission and annually, per the CDC guidelines and state requirements. Other resident care practices related to infections include prevention of aspiration, skin care, prevention of urinary tract infections, and oral hygiene.<sup>26</sup>

## **Antibiotic Review**

It is the physician's (or other appropriate authorized practitioner's) responsibility to prescribe appropriate antibiotics. The use of antibiotics and appropriate prescribing practices can be reviewed and discussed using the infection control data. Sensitivity reports provide information about the effectiveness of listed antibiotics. This information can be compared to the prescribed antibiotics. Because of increases in MDROs, this is a vital aspect of the review for appropriate use of antibiotics.

## **Communicable Disease Reporting**

It is important for each nursing home to have processes to consistently comply with state and local health department requirements for reporting communicable diseases.

## **Transmission of Infection**

Infectious organisms (e.g., bacteria, viruses, or parasites) may be transmitted by direct contact (e.g., blood and body fluids), or indirect contact (e.g., air, water, inanimate objects). While transmission of infection can occur by direct or indirect contact, direct contact is the most common. Health care personnel and resident care equipment often move from resident to resident and therefore may serve as a vehicle for transferring these infectious organisms. While airborne spread can occur by droplet nuclei or other particles in the air, environmental surfaces are also an important reservoir for infections. Infections caused by bacteria and viruses are especially common. *Clostridium difficile* can live on inanimate surfaces for up to six months while the hepatitis B virus can last a week and the HIV virus can survive for one hour outside the body.<sup>27</sup>

A unique challenge for nursing homes is to balance the need to protect all residents against the spread of infection while maintaining resident rights and daily living functions (e.g., ambulatory residents with potentially infectious symptoms). Another potential challenge is that the transmission of infectious agents within the nursing home may be affected by lack of conveniently placed hand hygiene facilities, places to rinse bedpans, absence of private rooms (when necessary), or inadequate ventilation systems (e.g. negative pressure rooms for active TB residents).

Appropriate disposal of waste is important to minimize the potential transmission of infections. It is important for the nursing home to monitor safe handling of blood and body fluids and the disposal of contaminated waste.

Significant components of a nursing home programs to prevent infection include active surveillance, with a procedure for identifying residents at risk for developing an infection (e.g., residents with indwelling urinary catheters) and the appropriate application of transmission based precautions when needed. Additional components include a written infection control plan with explicit instructions for infection surveillance. It is important for the Infection Control plan to address practices to reduce the transmission of infections including proper hand hygiene practices, appropriately handling and processing linens, maintaining safe employee health through immunization, improving employee knowledge about infection control, maintaining appropriate sanitization procedures, appropriate decontamination of the environment and resident care equipment, and overall adherence to Standard Precautions.

## **483.65(b 1-3) Preventing Spread of Infection**

### **Prevention of Infection**

In nursing homes the facility's infection control practices is critical to the prevention of the transmission of infections. Infection control precautions used by the facility include two primary tiers: "Standard Precautions" and "Transmission-Based Precautions". Standard Precautions are intended to be applied to the care of all residents in all healthcare settings, regardless of the suspected or confirmed presence of an infectious agent. Implementation of Standard Precautions constitutes the primary strategy for the prevention of healthcare-associated transmission of infectious agents among residents and healthcare personnel. Transmission-Based Precautions are for residents who are known or suspected to be infected or colonized with infectious agents, including certain epidemiologically important pathogens, which require additional control measures to effectively prevent transmission. Since the infecting agent often is not known at the time of admission to a healthcare facility, Transmission-Based Precautions are used empirically, according to the clinical syndrome and the likely etiologic agents at the time, and then modified when the pathogen is identified or a transmissible infectious etiology is ruled out.<sup>28</sup> Each of these categories is further described below.

### **Standard Precautions**

Standard Precautions are used with all resident encounters to the control the spread of infection. They are based on recognizing that all persons, body fluids, and objects may potentially be infectious. Appropriate infection control measures are used in each resident interaction. In addition to proper hand hygiene it is important for staff to use appropriate protective equipment as a barrier to exposure to any body fluids (whether known to be infected or not). Gloves and other equipment such as gowns and masks are to be used as necessary in situations identified as appropriate to control the spread of infections. Standard Precautions are also intended to protect residents by ensuring that healthcare personnel do not carry infectious agents to residents on their hands or via equipment used during resident care. Disposal of waste is handled as though all body fluids are infectious and the environment is cleaned using germicidal agents to reduce the transmission of infection.

Infection control activities within the nursing home include educating the facility staff, resident and family members regarding Standard Precautions, hand hygiene programs, vaccination programs and transmission based precaution procedures.<sup>29</sup> Since prevention of infections requires the collaboration of the entire interdisciplinary team it is important that all staff consistently and appropriately follow Standard Precautions.

Hand hygiene continues to be the primary means of preventing the transmission of infection. Hand washing with soap and water must be done if hands are visibly soiled,



1 before eating or handling food, after using the toilet, and any time needed for personal  
2 hygiene.<sup>30</sup> Hand hygiene using soap and water is required when handling food and food  
3 items. Antimicrobial agents such as alcohol-based hand rubs are also appropriate for  
4 cleaning hands and can be used in direct care areas. The following is a list of some  
5 situations that require hand hygiene:

- 6
- 7 • When coming on duty;
- 8 • When hands are soiled;
- 9 • Before and after any resident contact;
- 10 • Before and after performing any invasive procedure (e.g., fingerstick blood
- 11 sampling);
- 12 • Before and after entering isolation precaution settings;
- 13 • Before and after eating;
- 14 • Before and after assisting a resident with meals;
- 15 • Before and after assisting a resident with personal care (e.g., oral care, bathing)
- 16 • Before and after handling peripheral vascular catheters and other invasive devices
- 17 • Before and after inserting indwelling catheters;
- 18 • Before and after changing a dressing;
- 19 • When coming in contact with and after contact with a resident's intact skin, (e.g.
- 20 when taking a pulse or blood pressure, and lifting a resident);
- 21 • After personal use of the toilet;
- 22 • Before and after assisting a resident with toileting;
- 23 • After blowing or wiping nose;
- 24 • After contact with a resident's mucous membranes and body fluids or excretions;
- 25 • After handling linens, dressings, bedpans, catheters and urinals;
- 26 • After removing gloves or aprons; and
- 27 • After completing duty.
- 28

29 Recommended techniques for washing hands with soap and water include wetting hands  
30 first with water, applying the amount of product recommended by the manufacturer to  
31 hands, and rubbing hands together vigorously for at least 15 seconds covering all surfaces  
32 of the hands and fingers; then rinsing hands with water and drying thoroughly with a  
33 disposable towel.

34

35 Recommended techniques for performing hand hygiene with an alcohol based hand rub  
36 include applying product to the palm of one hand and rubbing hands together, covering  
37 all surfaces of hands and fingers, until the hands are dry. ABHR may not be used as a  
38 substitute for soap and water when hands are visibly soiled. In addition, gloves or the use  
39 of baby wipes are not a substitute for hand hygiene.

40

## **Transmission-based Precautions (formerly Isolation Precautions)**

Transmission-Based Precautions for residents with documented or suspected infection or colonization with highly transmissible or epidemiologically-important pathogens for which additional precautions are needed to prevent transmission. In nursing homes, the decisions regarding resident placement should be made on a case-by-case basis, balancing infection risks with the need for roommates, the presence of risk factors that increase the likelihood of transmission, and the potential for adverse psychological impact on the infected or colonized resident.<sup>31</sup>

Communication of Transmission-Based Precautions to all healthcare personnel and compliance with requirements are essential to successful preventive efforts. Signs, verbal reporting, and observations for compliance all enhance compliance and help to minimize the transmission of infections within the facility.

Nursing homes should use the standard categories for Transmission-Based Precautions: Airborne, Contact, and Droplet Precautions. The type of Transmission-based Precaution should be clearly identified to denote the type of personal protective equipment to be used in a resident's care. When transmission based precautions are in place personal protective equipment should be readily available near the entrance of the resident's room. Regardless of the type Transmission-based Precaution delineated, proper hand washing remains a key preventive measure.

Transmission-Based Precaution for a resident should be maintained for the length of time necessary to prevent transmission of infection by proximity. Once the resident has a colonized infection, the evaluation of the risks/benefits of Transmission-based Precaution is individualized. For example, leaving residents in isolation longer than necessary can decrease social interaction promoting social isolation and therefore should be avoided. The risks/benefits of Transmission-based Precaution should be documented in the resident's record.

## **Other Staff-Related Precautions**

Nursing home staff who have direct contact with residents or who handle food must be free of communicable disease and open skin lesions. The nursing home should have documentation of how they handle staff with communicable infections or open skin lesions.

It is critical to the prevention of the spread of infections that staff consistently uses proper hygienic practices and techniques. It is necessary for staff to have access to proper hand washing facilities with available soap (regular or anti-microbial), hot water, and disposable towels and/or heat/air drying methods. Antimicrobial gel (hand hygiene agent

that does not require water) cannot be used in place of proper hand washing techniques in a food service setting.<sup>32</sup>

All staff involved in direct resident contact must maintain nails that are clean, neat, and trimmed. Wearing intact disposable gloves in good condition and that are changed after each use will help reduce the spread of microorganisms. It is important for dietary staff to wear hair restraints (e.g., hairnet, hat, and/or beard restraint) to prevent their hair from contacting exposed food. Since jewelry can harbor microorganisms, it is recommended that dietary staff keep jewelry to a minimum and cover hand jewelry with gloves when handling food.<sup>33</sup>

### Safe Water Precautions

Safe drinking water is also critical to controlling the spread of infections. Public water companies have considerable expertise and resources to ensure that their supplies are properly designed and operated and their quality monitored to comply with the minimum requirements of the law. Water should be distributed through a mechanism specifically designed for output of water in a chlorinated form (containing more than 0.8 parts per-million (ppm) free residual chlorine). Stand alone water coolers and/or water fountains are often used in hallways and corridors of nursing home facilities. Contamination of such water dispensing equipment can be reduced by regular maintenance and cleaning.

Legionnaire's disease (often caused by *Legionella pneumophila*) is usually associated with hot water services and recirculating cooling water systems connected to air conditioning plants. *Legionella* is naturally widespread in water, particularly stagnant water systems where biofilm may build up and resist decontamination by heat, chlorination and biocides.<sup>34</sup> The infection is usually acquired by inhaling contaminated water droplets from ventilation systems and showers. To prevent legionellosis, hot water should be stored at 60°C (140°F) or above and cold water at 25°C (77°F) or less. Rinse water can also be a source of contamination. For example, hydrotherapy pools may cause skin, ear, and gastrointestinal infections. It is necessary to circulate pool water through filters and to use suitable disinfectants in appropriate amounts. If water is used as part of irrigation therapy, then a decontamination protocol ensures that showers, spray heads and tubing are regularly maintained. Regular inspection and maintenance of all water outlets and where problems can occur with water contamination are indicated.<sup>35</sup>

### Airborne Precautions

Airborne Precautions prevent the transmission of infectious agents that remain infectious when suspended in the air (e.g., varicella virus [chickenpox] and *M. tuberculosis*). The preferred placement for residents who require Airborne Precautions is in an airborne infection isolation room (AIIR). Management of some infections such as active TB requires a single-resident room that is equipped with special air handling and ventilation capacity. Although not all airborne infection residents will require an AIIR, residents with infections requiring an AIIR may need to be transported to an acute care setting

1 unless the nursing home can place the resident in a private AIIR room with the door  
2 closed. Depending on the condition, staff must use N95 or higher level respirators or  
3 masks if respirators are not available to reduce the likelihood of airborne transmission.  
4 Healthcare personnel caring for residents on Airborne Precautions wear a mask or  
5 respirator that is donned prior to room entry, depending on the disease-specific  
6 recommendations.<sup>36</sup>

## 8 **Contact Precautions**

9 Contact transmission risk requires the use of contact precautions to prevent infections that  
10 are spread by person to person contact. Contact transmission (the most common mode) is  
11 divided into two subgroups: direct and indirect contact.

12 Appropriate PPE for contact precaution is wearing a gown and gloves upon entering the  
13 contact precaution room. It is necessary for the PPE to be removed and perform hand  
14 hygiene performed before leaving the room.

### 16 **Direct Contact**

17 Direct contact occurs when microorganisms are transferred from one infected/colonized  
18 person to another without a contaminated intermediate object or person. Contaminated  
19 hands of healthcare personnel are important contributors to direct contact transmission.  
20 The following are examples of direct contact:

- 21 • Person-to-person contact;
- 22 • Mites from a scabies-infested person are transferred to the skin of  
23 another person while he/she is having direct ungloved contact with  
24 the skin; and
- 25 • MRSA, VRE and Influenza.

### 27 **Indirect Contact**

28 Indirect transmission involves the transfer of an infectious agent through a contaminated  
29 intermediate object or person. The following are examples of opportunities for indirect  
30 contact.

- 31 • Resident-care devices (e.g., electronic thermometers or glucose  
32 devices) may transmit pathogens if devices contaminated with  
33 blood or body fluids are shared without cleaning and disinfecting  
34 between uses for different residents.
- 35 • Clothing, uniforms, laboratory coats, or isolation gowns used as  
36 personal protective equipment (PPE), may become contaminated  
37 with potential pathogens after care of a resident colonized or  
38 infected with an infectious agent, (e.g., MRSA, VRE, and  
39 Clostridium difficile). Although contaminated clothing has not

been implicated directly in transmission, the potential exists for soiled garments to transfer infectious agents to successive residents.

- Indirect contact through toilets and bedpans. Diarrheal borne illnesses include salmonella, shigella, and pathogenic strains of E. coli, norovirus, and symptomatic Clostridium difficile.
- Among the most common preventable infections are those related to devices such as feeding tubes and urinary catheter.

Note: Depending on the situation, residents on contact precautions may need either a private room, cohorting, or sharing a room with a roommate with limited risk factors (i.e., without indwelling devices, without pressure ulcers and not immune system compromised).

Reducing and/or preventing infections through indirect contact requires; the decontamination of resident equipment, medical devices and the environment; and the use of Single-use disposable instruments. Decontamination of multiple use devices can be achieved in several ways, for example:

- Physical cleaning removes contamination but does not destroy microorganisms. It merely removes the microorganisms and the organic matter on which they thrive. However, physical cleaning is a key step in effective disinfection or sterilization.
- Disinfection reduces the number of viable microorganisms. This will not necessarily inactivate all microbial agents such as certain viruses and bacterial spores. Thus, sterilization is needed to make an object free from viable microorganisms including viruses and bacterial spores.

The choice of decontamination method depends on the risk of infection to the resident coming into contact with equipment or medical devices. The CDC has identified three risk levels associated with equipment and devices: critical, semi-critical and noncritical.<sup>37</sup>

- Critical or high-risk items (for example, needles) are defined as those that are used to penetrate skin, or mucous membranes, or enter the vascular system or sterile spaces. Sterility of the equipment at the time of use is required using one of several accepted sterilization procedures.<sup>38</sup>
- Semi-critical or intermediate risk items (for example, thermometers) are defined as those that come into contact with intact mucous membranes, but do not ordinarily penetrate body surfaces. These items may be contaminated with

1 particularly virulent or readily transmittable organisms. Such items require  
2 meticulous cleaning followed by high-level disinfection treatment or  
3 sterilization.<sup>39</sup>

- 4 • Noncritical items or low risk items (for example, stethoscopes) are defined as  
5 those that come into contact with intact skin or do not contact the resident. They  
6 require cleaning. Washing with a detergent is often sufficient.<sup>40</sup>
- 7 • Single-use disposable equipment is an alternative to sterilizing reusable medical  
8 instruments. Devices designated for single use are never to be reused.

9 The following strategies are recommended by the CDC for cleaning various items in the  
10 environment. When washing bed linens it is recommended to use hot water that has been  
11 at a minimum of 71°C for 25 minutes.<sup>41</sup> The reuse of items such as bedpans and urinals  
12 occurs after heat disinfection in a bedpan washer disinfectant at 80°C for 1 minute. These  
13 items should be stored dry. It is recommended that bed covers be cleaned regularly as  
14 part of a routine and following resident use. A water proof mattress or mattress cover  
15 that is routinely inspected for damage will reduce the risk of indirect contact with  
16 infectious agents. Discarding mattresses if fluids have penetrated into the mattress fabric  
17 and washing pillows and pillow covers in a hot-water laundry cycle will also reduce the  
18 risk of indirect contact with infectious agents.<sup>42</sup>

19  
20 Many nursing homes provide one washing bowl per resident. It is recommended that  
21 these items be cleaned with detergent and water after every use. To avoid contamination  
22 the bowls should be stored separately and inverted.<sup>43</sup> The frames of resident hoists  
23 should be surface-cleaned and the material and clips examined for wear or damage before  
24 each use to discourage the growth of infectious agents.

25  
26 An automated or mechanical cleaning process for items used for the benefit of nursing  
27 home residents is usually preferable to a manual process, but is often not feasible. For  
28 example, when using automated cleaning methods such as dishwashers and clothes  
29 washing machines, follow each use by disinfection. This is achieved through high  
30 temperatures (thermal disinfection). The use of bleach is not a substitute for the use of  
31 hot water however chemical agents such as bleach may be used along with hot water.

32  
33 The use of disinfectants routinely as cleaning agents, deodorants or for the storage of  
34 cleaning equipment (e.g. mops) is not recommended since organic debris (e.g. feces,  
35 secretions) may inactivate some disinfectants.

### 36 37 **Droplet Precautions**

38 With droplet transmission, in contrast to contact transmission, respiratory droplets  
39 carrying infectious pathogens transmit infection when they travel directly from the  
40 respiratory tract of the infectious individual to susceptible mucosal surfaces of the

recipient. This generally occurs with close proximity, necessitating facial protection. Respiratory droplets are generated when an infected person coughs, sneezes, or talks. Respiratory droplets may also generate during procedures such as suctioning, endotracheal intubation, cough induction by chest physiotherapy, and cardiopulmonary resuscitation. Studies have shown that the nasal mucosa, conjunctivae and less frequently the mouth, are susceptible portals of entry for respiratory viruses.<sup>44</sup> Examples of droplet borne infections include but are not limited to influenza and mycoplasma.

The maximum distance for droplet transmission is currently unresolved, but the area of defined risk based on epidemiological findings is approximately 3-10 feet. Generally, however, pathogens transmitted by the droplet route have not been transmitted through the air over long distances, as is the case with airborne pathogens. Masks are to be used within approximately 6 to 10 feet of a resident or upon entry into the resident's room with respiratory droplet precautions. Residents with droplet precautions are placed in either a private room, cohorted, or share a room with a roommate with limited risk factors.

## **483.65(c) Linens**

### **Preventing the Spread of Infections: Linens**

It is important that all dirty linen be handled with care in order to minimize the potential spread of infection. It is recommended that gloves used by staff to handle laundry and those used for direct care activities meet the same standards because of the potential exposure to blood and other body fluids. Suitable protective glove alternatives are available for individuals with latex sensitivity.

It is recommended that linen be removed from a resident's bed and be placed in an appropriate bag category outside the room. Personal clothing placed in a linen bag or industrial linen container and not placed on the floor may also help to minimize the spread of infection. This process categorizes linens ready for decontamination, thus avoiding additional handling within the laundry. Personnel who avoid placing empty bags of linen onto the floor to sort the linen prevent the unnecessary risk of infection.

If linen is sent offsite to a professional laundry facility, the facility gives the professional laundry written guidance about practical management of the linens for infection control.

Linen is separated into three main categories: used linen and clothing; heavily soiled/infected linen; and clothing and heat-labile linen. For ease of identification, a color code system is recommended. Additionally, it is recommended that individual containers be exclusively used for each of the three categories. For example, using different color coded linen bags for each of the three categories. Infected linen is defined as linens contaminated with blood or other body fluids that could contain pathogenic organisms.

Detergent and water will physically remove many microorganisms from the linen during the wash cycle. An effective way to destroy microorganisms in laundry items is through hot water washing at temperatures above 160°F (7°C) for 25 minutes.<sup>45</sup>

## **Implementation of Transmission-Based Precautions**

Diagnosis of many infections requires laboratory confirmation. Since laboratory tests, especially those that depend on culture techniques, often require two or more days for completion, Transmission-Based Precautions must be implemented while test results are pending based on the clinical presentation and likely category of pathogens. Use of appropriate Transmission-Based Precautions at the time a resident develops symptoms or signs of a transmissible infection, or arrives at a nursing home with infectious symptoms (until laboratory confirmation) reduces transmission opportunities. While it is not possible to identify prospectively all residents needing Transmission-Based Precautions, certain clinical syndromes and conditions carry a high enough risk warranting using such precautions empirically while testing to confirm the diagnosis.<sup>46</sup> However, once it is confirmed that the resident is no longer at risk of transmitting the infection the droplet precautions should be immediately removed to avoid the risk of unnecessary social isolation.

Three MDRO's increasingly evident in nursing homes are Vancomycin-resistant enterococcus (VRE), Methicillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile*. Transmission-based precautions should be employed for residents who are actively infected with multi-drug resistant organisms (MDRO's). Aggressive infection control measures and strict compliance by healthcare personnel are required to minimize the spread of VRE.<sup>47</sup>

Vancomycin Resistant Enterococcus (VRE) is an infection with enterococcus organisms which have developed a resistance to the antibiotic, Vancomycin. Enterococcus is an organism that normally occurs in the colorectal tract. Some VRE infections have been associated with prior antibiotic use.

Two major variables impact the effectiveness of infection control practices regarding VRE infection and colonization:

- Employee adherence to nursing home transmission based precaution procedures; and
- Preventive actions to minimize the numbers of residents with VRE infection.

## **Methicillin-Resistant *Staphylococcus Aureus* (MRSA) and Vancomycin Resistant Enterococcus (VRE)**

*Staphylococcus* infects the very ill elderly in nursing homes as well as relatively healthy individuals in the community. MRSA is an infection or colonization with the *staphylococcus aureus* organism that does not respond to treatment with methicillin.



1  
2 MRSA infections tend to occur more often in residents with co-morbidities (e.g. HIV,  
3 diabetes, renal failure).<sup>48</sup> The most common sites of colonization are the rectum,  
4 perineum, skin and nares.<sup>49</sup> Colonization may endure beyond an acute infection.  
5

6 This type of infection has been treated with Vancomycin, which has in turn led to  
7 increased Enterococcus virulence and antibiotic resistance. The concern is that resistance  
8 of Staphylococcus organisms to Vancomycin will also increase. Therefore while the  
9 primary concern is to prevent MRSA infection, this will in effect prevent the VRE.  
10

11 MRSA is transmitted person-to-person (most common), on inanimate objects and through  
12 the air. Risk factors for MRSA infection include;

- 13 • MRSA colonization,
  - 14 • Insulin dependent diabetes mellitus,
  - 15 • Chronic hemo-dialysis,
  - 16 • Intravenous drug use, and
  - 17 • Various types of chronic drug use.
- 18

#### 19 **Clostridium difficile (C. difficile)**

20 Clostridium difficile (C. difficile) is a species of bacteria of the genus Clostridium which  
21 are gram-positive, anaerobic, spore-forming rods (bacillus). C. difficile is the most  
22 significant cause of pseudomembranous colitis, caused by a severe infection of the colon,  
23 often after antibiotic use eradicates normal intestinal flora. Treatment includes stopping  
24 antibiotics and starting specific ant Clostridial antibiotics, e.g. metronidazole.  
25

26 If a resident has diarrhea due to C. difficile, large numbers of C. difficile bacteria will be  
27 released from the intestine into the environment and may be transferred to other  
28 individuals, causing additional infections. The main symptom is diarrhea, but stomach  
29 pains and fever may also occur. In most people, C. difficile is a mild but uncomfortable  
30 diarrhea which settles without complication. In the elderly, the diarrhea may be more  
31 severe and complications may develop. In rare cases, C. difficile causes extensive  
32 damage to the intestine wall (called pseudomembranous colitis), which can lead to  
33 additional complications.  
34

35 If a resident develops C. difficile diarrhea, placement on Transmission-based Precautions  
36 will prevent other residents from exposure. This will usually require a single room until  
37 the transmission risk no longer exist. It is appropriate to put on and remove gloves and  
38 gowns/aprons while caring for this resident or when exiting the isolation room. In  
39 addition these practices may reduce the risk of cross-transmission. Thorough hand  
40 washing with soap and water (not alcohol-based hand rubs) before tending to another

1 resident may also reduce the risk of cross-transmission. The resident should also be  
2 given their own toilet facilities that will not be shared by other residents.

3  
4 *C. difficile* can produce spores that allow it to survive for up to six months in the  
5 environment- such as on floors, bed rails or around toilet seats. It is important that these  
6 areas are rigorously cleaned to remove *C. difficile* spores, so that other residents cannot  
7 acquire this infection. Staff should utilize standard precautions within the resident's  
8 room.

9  
10 Nursing homes should use the Standard Precaution definitions for Airborne, Droplet,  
11 Contact, and Transmission-based Precautions. Signage can be posted on the resident's  
12 door for visitors to see the nurse before entering. The type of precautions must be clearly  
13 identified to earmark the type of personal protective equipment to be used in the care of  
14 the resident. Personal protective equipment should be readily available near the entrance  
15 to the resident's room.

### 16 17 **Risks Associated with Intravascular Catheters**

18 Intravascular catheters are used regularly in medical practice to provide vascular access,  
19 and are seen more often in nursing homes. Although such catheters provide necessary  
20 vascular access, they may place residents at risk for local and systemic infectious  
21 complications, including localized site infection and septic thrombophlebitis.

22  
23 Other catheters have been associated with particular types of infections in the same way  
24 that peripheral lines have been associated with phlebitis. The majority of serious  
25 catheter-related infections are associated with central venous catheters (CVCs). Central  
26 venous access might be needed for extended periods of time in nursing homes. Certain  
27 catheters such as dialysis catheters and implanted ports may be accessed multiple times  
28 per day for hemodynamic measurements or to obtain samples for laboratory analysis,  
29 increasing the likelihood of contamination and subsequent clinical infection.

30  
31 Surveillance should consistently include all residents with vascular access. Residents  
32 identified as at risk of infection in the surveillance data should include all residents with  
33 venous access and implanted ports such as PICC Lines, Midlines, and peripheral access  
34 catheters. Practice surveillance includes observations of insertion sites, routine dressing  
35 changes, use of appropriate protective equipment during the care and treatment of  
36 residents with venous catheters, and reviews of the resident for clinical signs and  
37 symptoms of infection.

### 38 39 **Strategies for Prevention of Catheter-Related Infections**

40 Efforts to ensure consistent infection control technique when caring for residents with  
41 venous access reduce the risk for catheter-related infections. With frequent review of  
42 venous access care technique and ongoing training to staff, more positive outcomes may  
43 be expected.<sup>50</sup>

## Section Summary

The directives in this section of the Guidance are not exhaustive. However, this section provides a brief overview of key components of an Infection Control Program.

## END NOTES

<sup>1</sup> Merriam-Webster Medical Online Dictionary. See <http://medical.merriam-webster.com/medical/contagious%20disease>. Contagious disease, accessed Sept. 2, 2008.

<sup>2</sup> Horan TC, Gaynes R. Surveillance of nosocomial infections. In: Mayhall CG, ed. Hospital epidemiology and infection control. Philadelphia: Lippincott Williams & Wilkins, 2004:1659-1702.

<sup>3</sup> Siegel, Jane D, MD; Rhinehart, Emily, RN MPH CIC; Jackson, Marguerite, PhD; Chiarello, Linda, RN MS (2006). Multidrug-Resistant organisms in healthcare settings. The Healthcare Infection Control Practices Advisory Committee.

<sup>4</sup> CDC Infection Control Guidelines. Guideline for Isolation Precautions 2007, p 48.-54

<sup>5</sup> Richards C. Infections in residents of long-term facilities. J AM Geriatr Soc 2002; 50 570-576.

<sup>6</sup> Ibid.

<sup>7</sup> Strausbaugh LJ, Joseph CL. The burden of infection in long-term care. Infect Control Hosp Epidemiol 2000; 21:6749. As cited in: Smith PW; Bennett G; et al., Infect Control Hosp Epidemiol 2008; 29: SHEA/APIC Guideline: Infection Prevention and Control in the Long-Term Care Facility. July, 2008. <http://www.journals.uchicago.edu/doi/full/10.1086/592416-aff1><http://www.journals.uchicago.edu/doi/full/10.1086/592416-cor1><http://www.journals.uchicago.edu/doi/full/10.1086/592416-aff2><http://www.journals.uchicago.edu/doi/full/10.1086/592416-aff3><http://www.journals.uchicago.edu/doi/full/10.1086/592416-aff4><http://www.journals.uchicago.edu/doi/full/10.1086/592416-aff5>

<sup>8</sup> Strausbaugh, op. cit.

<sup>9</sup> Association for Professionals in Infection Control and Epidemiology, Inc. APIC Text of Infection Control and Epidemiology. January 2005. 2<sup>nd</sup> ed. Pg. 53-4

<sup>10</sup> Smith PW; Bennett G; et al., Infect Control Hosp Epidemiol 2008; 29: SHEA/APIC Guideline: Infection Prevention and Control in the Long-Term Care Facility. July, 2008. Pg. 795.

<sup>11</sup> Ibid.

<sup>12</sup> Summary of the Guidelines for Isolation Precautions in Hospitals: HICPAC Recommendations for Isolation Precautions in Hospitals (Reference 15: *Infection Control and Hospital Epidemiology* 1996;17(1):53-80)

<sup>13</sup> Summary of the Guidelines for Isolation Precautions in Hospitals: HICPAC Recommendations for Isolation Precautions in Hospitals (Reference 15: *Infection Control and Hospital Epidemiology* 1996;17(1):53-80)

<sup>14</sup> Ibid.

<sup>15</sup> CDC Infection Control Guidelines. Guideline for Handwashing and Environmental Control 1985, Section 2: Cleaning, Disinfecting and Sterilizing Resident-Care Equipment.

<sup>16</sup> CDC Injection Safety FAQs for Providers. See <http://www.cdc.gov/ncidod/dhqp/injectionSafetyFAQs.html#Q11>  
Released: March 2008

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- <sup>17</sup> CDC Guidelines for Handwashing and Environmental Control, 1985, Section 2: Cleaning, Disinfecting, and Sterilizing Resident-Care Equipment
- <sup>18</sup> APIC 2005 op cit. Pg. 53-5.
- <sup>19</sup> Ibid.
- <sup>20</sup> Smith, Philip W; Bennett Gail Bennett et al, SHEA/APIC Guideline: Infection Prevention and Control in the Long-Term Care Facility Infection Control and Hospital Epidemiology. September 2008, Vol. 29, No. 9. pg. 796
- <sup>21</sup> Ibid.
- <sup>22</sup> **(Need Reference-Karen is sending reference here).**
- <sup>23</sup> APIC 2005 op cit. Pg. 53-6.
- <sup>24</sup> OSHA Bloodborne Pathogen Standard (29-CFR) 1910.1030.
- <sup>25</sup> CDC Infection Control Guidelines. Guideline for Isolation Precautions 2007. p 48.
- <sup>26</sup> Coleman, Patricia and Watson, Nancy M. (2006). Oral care provided by certified nursing assistants in nursing homes. Oral Care in Nursing Homes. JAGS, Jan. 54(1), 1.
- <sup>27</sup> CDC Guidelines for Environmental Infection Control in Health-Care Facilities, 2003.p.103-115.
- <sup>28</sup> CDC Infection Control Guidelines. Guideline for Isolation Precautions 2007. p 48-57.
- <sup>29</sup> Ibid.
- <sup>30</sup> APIC 2005 op cit. Pg. 53-8
- <sup>31</sup> CDC Infection Control Guidelines: Guideline for Isolation Precautions 2007. p 84.
- <sup>32</sup> U.S. Department of Health and Human Services, Public Health Service, Food and Drug Administration. (2005). Food Code, p 43.
- <sup>33</sup> U.S. Department of Health and Human Services, Public Health Service, Food and Drug Administration. (2005). Food Code, pp 43-45.
- <sup>34</sup> Freije MR. *Legionella* control in health care facilities: a guide for minimizing risk. HC Information Resources, Inc. 1996; 65–75.
- <sup>35</sup> Ibid.
- <sup>36</sup> CDC Guideline, Respiratory Protection I.I.E.4, Table 2, and Appendix (e.g., disseminated Varicella and Tuberculosis.
- <sup>37</sup> CDC. Disinfection and Sterilization of Resident-Care Equipment, 1985. Excerpted from the Guidelines for Handwashing and Environment Control, 1985. As taken from Vaero MS. Chemical disinfection of medical and surgical materials. In: Block SS, ed. Disinfection, sterilization and preservation. 3<sup>rd</sup> ed. Philadelphia: Lea and Febiger, 1983:469-92.
- <sup>38</sup> CDC. Disinfection and Sterilization of Resident-Care Equipment, 1985. Excerpted from the Guidelines for Handwashing and Environment Control, 1985.
- <sup>39</sup> Ibid.
- <sup>40</sup> Ibid.
- <sup>41</sup> CDC Guidelines for Environmental Infection Control in Health-Care Facilities, 2003.p.103-104
- <sup>42</sup> Ibid. p104.
- <sup>43</sup> Ibid. p104.
- <sup>44</sup> Ibid. p106.
- <sup>45</sup> APIC 2005, op cit. Pg 53-11.
- <sup>46</sup> CDC Infection Control Guidelines. Guideline for Isolation Precautions 2007, Appendix A, page 71.
- <sup>47</sup> AMDA, Critical Issues in Infection Control, Focusing on VRE and MRSA in LTC Setting, 2001.
- <sup>48</sup> Ibid.
- <sup>49</sup> Williams, REO. Healthy carriage of *Staphylococcus aureus*: its prevalence and importance. Bacteriol Rev. 1963; 27:56-71, cited in Bradley SF, Methicillin-resistant *Staphylococcus aureus*: Long-Term Care concerns, AM J Med 1999; 106(5A):2S-10S.
- <sup>50</sup> Morbidity and Mortality Weekly Report. Guidelines for the Prevention of Intravascular Catheter-Related Infections Vol. 51, RR-10. August 2002, Centers of Disease Control and Prevention (CDC), Guidelines for the Prevention of Intravascular Catheter-Related Infections, 2002.

## 1 INVESTIGATIVE PROTOCOL FOR INFECTION CONTROL

### 2 INFECTION CONTROL

#### 3 Objectives

- 4 • To determine if the nursing home has an infection control program  
5 that investigates, controls and prevents infections in the nursing  
6 home.
- 7 • To determine if the nursing home has a program that collects  
8 information regarding infections acquired in the nursing home,  
9 analyzes the information and develops a plan of action to prevent  
10 further infections.
- 11 • To determine if the facility staff are trained in infection control  
12 practices to minimize the transmission of infections.

#### 13 Use

14 Use this protocol to investigate nursing home practices when there are concerns about  
15 infection control issues including observed deviations from recommended infection  
16 control practices.

#### 17 Procedures

18 The surveyor should conduct the following observations, interviews and record reviews,  
19 and review the nursing home's infection control policies, procedures and documentation.

##### 20 1. Observations

21 Conduct the following observations:

- 22 • Observe various disciplines (nursing, dietary, and housekeeping) to  
23 determine if they follow infection control practices and  
24 transmission based precaution procedures;
- 25 • Observe whether staff handle, process, transport, and store linen to  
26 prevent the transmission of infection;
- 27 • Observe how the nursing home uses the results of the data it  
28 collects related to infections to identify and prevent the spread of  
29 infections and to adjust its infection control program, as  
30 appropriate;

- Observe employees for overt signs of illness or communicable disease (e.g. cold symptoms, open lesions on hands); and
- Observe for whether there is appropriate communication to staff and visitors of precautions and related processes, including the use of PPE (gowns, masks, and gloves).

### **Cleaning and Disinfecting**

- Observe whether equipment in Transmission Based Precaution rooms is either dedicated to that resident or thoroughly cleaned and disinfected between residents;
- Observe for visibly soiled high touch surfaces in the environment; and
- Observe for whether small non-disposable equipment such as glucose meters, scissors, and thermometers (non-disposable) are cleaned and disinfected after being used for individual resident care.
- Observe whether disposable items are disposed of after every single use.

### **Hand Hygiene**

- Observe for whether proper hand hygiene is used before and after putting on and taking off gloves during all resident care that requires use of gloves;
- Observe for whether proper hand hygiene and gloves are used during dressing changes and medication administration (e.g. eye drops and injections);

## **2. Interview**

Interview nursing home staff to determine whether:

- The nursing home identifies where infections are acquired (e.g. nursing home or community);
- The Infection Control Program include a review of whether antibiotic use in the nursing home is appropriate, including whether antibiotics are given for asymptomatic colonization;
- The nursing home uses its infection control reports to guide its related processes and practices;

- Staff training include critical areas of infection control, including areas for improvement from surveillance data and appropriate use of protective equipment and isolation precautions;
- The nursing home collect, analyze, and use data related to infections;
- The Quality Assessment and Assurance Committee identify and address infection control issues;
- The nursing home monitor periodically staff practices of hand hygiene and isolation precautions;
- The nursing home cohort individuals with infections and infection risks and how do these practices compare with CDC recommendations;
- The nursing home identify individuals with infections;
- The facility appropriately select and decide when to implement and terminate transmission based precaution procedures;
- The facility handles linen to prevent the spread of infection;
- The facility has documentation related to their review of the appropriateness and effectiveness of antibiotics for residents that are identified as receiving antibiotics; and
- Ask staff whether they have used products for hand hygiene, whether they have had any adverse effects (skin rashes, etc.) from using such products, and if so whether and to whom they have communicated this information?

Interview residents, families or responsible parties to the extent possible to identify:

- Whether they have received education and information about infection control practices, such as appropriate hand hygiene.

### 3. Record Review

In order to investigate identified infection control concerns, review the facility's:

- Resident records for increased risk of infection (e.g. indwelling urinary catheters, intravenous catheters, and tracheostomy tubes);
- Infection control policies to determine if they are consistent with current professional standards of practice and if the infection control policies are defined by department (e.g., dietary, nursing)

determine whether the facility communicate these policies across departments;

- Documentation of whether and how the infection control program collects and analyzes data and implements a program to guide all disciplines to prevent the spread of infections and identify infections in a standardized and systematic way;
- Policies regarding handling soiled linens;
- Applied preventive components of the infection control program in the care of individual residents;
- Quality improvement documentation related to occupational communicable disease exposure and post-exposure follow up;
- Employee health infection control plan to determine if critical elements of the infection control plan are provided via initial and ongoing employee infection control training;
- Infection control training for volunteers and other individuals that help provide resident care;
- Pre-employment screening processes include documentation of communicable infections; and
- Resident's plan of care for interventions (device management and isolation precaution measures) to prevent the transmission of infection.

## **DETERMINATION OF COMPLIANCE CRITERIA FOR COMPLIANCE**

### **Synopsis of Regulation (F441)**

#### **Criteria for Compliance**

The facility is in compliance with 42 CFR 483.65 Infection Control, if staff:

- Through the infection control program has collected infection control summary data which demonstrates surveillance, investigation, and monitoring to prevent the onset and the spread of infection, to the extent possible;
- Demonstrate nursing home practices to reduce the spread of infection and control outbreaks, through Transmission-based Precautions, clustering or cohorting of residents;



- Demonstrate that the nursing home uses infection control summary data to improve its processes by taking corrective action, and staff education regarding any nursing home changes to improve infection outcomes; and
- Demonstrate proper hand hygiene practices and storage and handling of linens to minimize contamination.

If not, cite at Tag F441.

#### **Noncompliance for F441**

After completing the Investigative Protocol, analyze the data in order to determine whether noncompliance with the regulation exists. Noncompliance for Tag F441 may include, but is not limited to, failure to do one or more of the following:

- Develop an infection control program;
- Utilize infection precautions to minimize the transmission of infection;
- Properly identify a resident with an infectious process and treat them;
- Demonstrate proper hand hygiene and dispose of soiled linens;
- Demonstrate the use of surveillance data to adjust nursing home processes to address a known infection risk; and
- Identify an IP to direct the infection control program across the entire nursing home.

#### **POTENTIAL TAGS FOR ADDITIONAL EVALUATION INVESTIGATION**

During the investigation of F441, the surveyor may have identified concerns with additional requirements related to outcome, process, and/or structure requirements. The surveyor is cautioned to investigate these related requirements before determining whether non-compliance may be present. Examples of some related requirements that may be considered when non-compliance at F441 has been identified include the following:

- 42 CFR §483.20(b), F272, Comprehensive Assessments
  - o Determine if the facility comprehensively assessed the resident for evidence of actual infection and identified risks of infection.

- 42 CFR §483.20(k)(2)(iii), F280, Comprehensive Care Plan Revision

- o Determine if the facility developed a care plan consistent with the resident's specific infection status, risks, needs, behaviors, and current standards of practice and included measurable objectives and timetables, specific interventions/services to prevent the onset and/or transmission of infection.

- 42 CFR §483.25(d), F315 Urinary Incontinence

- o Determine if the facility implemented measures to try to prevent spread of infection to those with indwelling urinary catheters (for example, by appropriate cohorting).

- 42 CFR §483.25(l), F329 Unnecessary Drugs

- o Determine if the facility has placed resident on antibiotic therapy for an excessive duration without monitoring or indications.

- 42 CFR §483.25(l)(2)(n), F334, Influenza and Pneumococcal Immunizations

- o Determine if the facility has systems in place to immunize residents against influenza and pneumococcal infections.

- 42 CFR §483.35(i)(2), F371, Sanitary Conditions

- o Determine if the facility has implemented processes to prevent infection transmission via food handling, storing and delivery systems.

## V. DEFICIENCY CATEGORIZATION (PART V, APPENDIX P)

Once the team has completed its investigation, analyzed the data, reviewed the regulatory requirements, and determined that noncompliance exists, the team must determine the severity of each deficiency, based on the resultant effect or potential for harm to the resident.

The key elements for severity determination for Tag F441 are as follows:

1. **Presence of harm/negative outcome(s) or potential for negative outcomes due to a failure of care and services.** Actual or potential harm/negative outcomes for F441 (formerly F441, F442, and F445) may include but are not limited to:

Failure to properly implement Transmission Based Precautions for a resident with an active communicable infection;

The absence of an infection control committee response to infection control data which describes significant increases in infection within the facility;

Potential for exposure to infection related to the facility staff with active communicable infectious symptoms that continue to provide resident care;  
Failure to properly wash hands when entering and exiting an isolation room; and  
Failure to identify a resident with MDRO once admitted to the nursing home.

**2. Degree of harm (actual or potential) related to the noncompliance.** Identify how the facility practices caused, resulted in, allowed, or contributed to the actual or potential for harm.

If harm has occurred, determine if the harm is at the level of serious injury, impairment, death, compromise, or discomfort; and

If harm has not yet occurred, determine how likely the potential is for serious injury, impairment, death, compromise or discomfort to occur to the resident.

**3. The immediacy of correction required.** Determine whether the noncompliance requires immediate correction in order to prevent serious injury, harm, impairment, or death to one or more residents.

The survey team must evaluate the harm or potential for harm based upon the following levels of severity for this tag. First, the team must rule out whether Severity Level 4, Immediate Jeopardy to a resident's health or safety exists by evaluating the deficient practice in relation to immediacy, culpability, and severity. (Follow the guidance in Appendix Q.)

**Severity Level 4 Considerations: Immediate Jeopardy to resident health or safety**

Immediate Jeopardy is a situation in which the facility's noncompliance:

- With one or more requirements of participation has caused/resulted in, or is likely to cause, serious injury, harm, impairment, or death to a resident; and
- Requires immediate correction as the facility either created the situation or allowed the situation to continue by failing to implement preventative or corrective measures.

**NOTE:** The death or transfer of a resident, who was harmed as a result of facility practices, does not remove a finding of immediate jeopardy. The facility is required to implement specific actions to correct the deficient practices which allowed or caused the immediate jeopardy.

Examples of avoidable actual or potential resident outcomes that demonstrate severity at Level 4 may include, but are not limited to:

#### Severity Level 4 – Immediate Jeopardy

- The facility failed to follow Standard Precautions during the performance of routine testing of blood sugars. The facility did not clean the spring-loaded lancet devices before or after use, and re-used lancet devices on residents who required blood sugar monitoring. This practice of re-using unclean lancet devices created an Immediate Jeopardy to resident health by potentially exposing residents to the spread of blood borne infections for multiple residents in the facility who required blood sugar testing.
- The facility failed to restrict a staff member with an MSRA documented open, draining and infected skin lesion to work without adequately covering the area, resulting in MSRA transmission and infection of several residents under that staff person's care.
- The facility failed to institute any internal surveillance for adherence to hand washing procedures or pertinent reminders to staff regarding appropriate hand hygiene during an outbreak of diarrheal illness.

**NOTE:** If immediate jeopardy has been ruled out based upon the evidence, then evaluate whether actual harm that is not immediate jeopardy exists at Severity Level 3 or the potential for more than minimal harm at Level 2 exists

#### Severity Level 3 Considerations: Actual Harm that is not Immediate Jeopardy

Level 3 indicates noncompliance that results in actual harm that is not immediate jeopardy. The negative outcome can include but may not be limited to clinical compromise, decline, or the resident's inability to maintain and/or reach his/her highest practicable well-being.

Severity Level 3 may include:

Examples of avoidable actual resident outcomes that demonstrate severity at Level 3 may include, but are not limited to:

- The facility failed to investigate and try to contain an outbreak of gastrointestinal illness among residents, as a result, additional residents were sick with diarrheal illness and hospitalized for dehydration.
- The facility failed to routinely send urine cultures of asymptomatic residents with indwelling catheters, putting residents with positive cultures on antibiotics, resulting in two residents who get antibiotic-related colitis and significant weight loss.

- The facility failed to follow up on culture results for two residents with urinary tract infections. This resulted in a prolonged course of antibiotics and the residents developed urisepsis.

**NOTE:** If Severity Level 3 (actual harm that is not immediate jeopardy) has been ruled out based upon the evidence, then evaluate as to whether Severity Level 2 (no actual harm with the potential for more than minimal harm) exists.

**Severity Level 2 Considerations: No Actual Harm with potential for more than minimal harm that is not Immediate Jeopardy**

Level 2 indicates noncompliance that results in a resident outcome of no more than minimal discomfort and/or has the potential to compromise the resident's ability to maintain or reach his or her highest practicable level of well being. The potential exists for greater harm to occur if interventions are not provided.

For Level 2 severity, the resident was at risk for, or has experienced the presence of one or more outcome(s). Examples of avoidable outcomes include, but are not limited to:

- The facility failed to ensure that their staff demonstrates proper hand sanitization between residents to prevent the spread of infections. The staff administered medications to a resident via a gastric tube and while wearing the same gloves proceeded to administer oral medications to another resident. The staff did not remove the used gloves and wash or sanitize their hands between residents.
- For residents with open wounds or pressure ulcers the nursing home failed to swab the wound surfaces and send sample to the laboratory for culture and sensitivity testing, and initiate antibiotic therapy for asymptomatic residents with positive culture results. The wound treatment regime for residents did not include a schedule for monitoring the frequency which residents' wounds are cultured.
- The facility failed to implement a surveillance program including the investigation of infections or attempt to distinguish facility-acquired from community-acquired infections.

**Severity Level 1: No actual harm with potential for minimal harm**

The failure of the facility to provide appropriate care and services for infection control practices, places the resident at risk for more than minimal harm. Therefore, Severity Level 1 does not apply for this regulatory requirement.